

a second endcap joined to said second opposed surface of said second electro active substrate;

first circuitry for applying a first electric field across said first and second electrodes of said electro active devices; and

second circuitry independent of said first circuitry for applying a second electric field across said first and third electrodes of said electro active devices, said second electrical field having a phase relationship with said first electrical field, wherein the application of said first and second electrical fields causes an amplitude and phase relationship such that each of said electro active devices produces a combined flexural and bending motion generating a directional beam.

#### **REMARKS**

Claims 1-8 and 10-17 are pending in the application. Claims 1, 10 and 17 have been amended. Reconsideration of this application is respectfully requested.

Applicants greatly appreciate the Examiner granting an interview to Dr. Robert Newnham and his attorneys on January 15, 2003. During the interview, the Examiner indicated that claim 10 and its dependent claims 11-16 are allowable and that claims 1 and 17 would be allowable if amended to recite that the second circuitry is independent of the first circuitry.

Claims 1 and 17 have been amended to recite that the second circuitry is independent of the first circuitry and, therefore, are allowable. Also, claims 2-8, which are dependent on allowed claim 1, are, therefore, now allowable. Thus all of the claims 1-8 and 10 -17 are now allowed.

Since all of the claims are now allowed, it is submitted that the rejection of claims 1-8 and 10-17 under 35 U.S.C. 102 (b) is moot and should be withdrawn.

Attached hereto is a marked-up version of the changes made to the specification and claims by the present amendment. The attachment is captioned "Version With Markings To Show Changes Made."

It is respectfully requested for the reason set forth above that the rejection under 35 U.S.C. 102(b) be withdrawn, that claims 1-8 and 10-17 are allowed and that this application be passed to issue.

For the reasons set forth above, it is submitted that this amendment places the application in condition for allowance. Accordingly, it is respectfully requested that this application be allowed and passed to issue. If this amendment is deemed to not place the application in condition for allowance, it is respectfully requested that it be entered for the purpose of appeal.

Respectfully Submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

Application, Serial No. 09/942,272

**IN THE CLAIMS**

Please amend the claims as follows:

1. (Twice amended) An electro active device for generating a directional beam comprising:

first and second electro active substrates each having first and second opposed continuous planar surfaces wherein each of said first opposed surfaces have a polarity and each of said second opposed surfaces have an opposite polarity, wherein said first opposed surfaces of said first and second electro active substrates are in close contact;

a first electrode coupled to a junction formed by said first opposed surfaces having the same polarity;

a second electrode coupled to said second opposed surface of said first electro active substrate;

a third electrode coupled to said second opposed surface of said second electro active substrate;

a first endcap joined to said second opposed surface of said first electro active substrate;

a second endcap joined to said second opposed surface of said second electro active substrate;

first circuitry for applying a first electric field across said first and second electrodes; and

second circuitry independent of said first circuitry for applying a second electric field across said first and third electrodes, said second electrical field having a phase relationship with said first electrical field, wherein the application of said first and second electrical fields causes an amplitude and phase relationship such that said electro active device produces a combined flexural and bending motion generating [a] said directional beam.

10. (Amended) A method for generating a directional beam utilizing an electro active device comprising first and second electro active substrates each having first opposed planar surfaces of the same polarity in close contact, said first and second electro active substrates each having a second opposed planar surface joined to an endcap having a truncated conical shape, said method comprising: applying a first electrical field to a said first electro active substrate; applying a second electrical field to said second electro active substrate, wherein said first and second electrical fields have an amplitude and phase relationship such that said electro active device produces a combined flexural and bending motion, thereby producing said directional beam.

17. (Amended) A vibration production system comprising:

a plurality of electro active devices for generating a directional beam of vibration arranged in an array, each electro active device having:

first and second electro active substrates each having first and second opposed continuous planar surfaces wherein each of said first opposed

surfaces have a polarity and each of said second opposed surfaces have an opposite polarity, wherein said first opposed surfaces of said first and second electro active substrates are in close contact;

a first electrode coupled to a junction formed by said first opposed surfaces having the same polarity;

a second electrode coupled to said second opposed surface of said first electro active substrate;

a third electrode coupled to said second opposed surface of said second electro active substrate;

a first endcap joined to said second opposed surface of said first electro active substrate; and

a second endcap joined to said second opposed surface of said second electro active substrate;

first circuitry for applying a first electric field across said first and second electrodes of said electro active devices; and

second circuitry independent of said first circuitry for applying a second electric field across said first and third electrodes of said electro active devices, said second electrical field having a phase relationship with said first electrical field, wherein the application of said first and second electrical fields causes an amplitude and phase relationship such that each of said electro active devices produces a combined flexural and bending motion generating a directional beam.